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MARKET-CROSSES.

II.

MARKET-CROSS, CHEDDAR.

In the earlier stages of society, and in places remote from any capital city or sea-port town, the institution of markets or fairs was peculiarly serviceable. The necessaries or luxuries of life were then procurable at few places only, and these were situated at considerable distances from each other; so that it was for the public advantage that large markets or fairs should be held at stated times, where the people might supply their wants for some months ensuing. So many were the advantages resulting to all parties from fairs, that in order to induce merchants to attend them, various privileges were annexed to them, and facilities afforded for the disposal of property in them. To impart a greater degree of solemnity to them, they were associated with religious festivals; indeed, they are in most places still held on the same day with the wake or feast of the saint to whom the neighbouring church was dedicated. Some persons are disposed to trace the origin of fairs in the annual resort to some holy well, or the festival of the patron saint, because the most ancient fairs are found to correspond with the dedication of the church, and were frequently held in churchyards, until restrained by the statute of Winchester, in the thirteenth year of the reign of Edward I. Down to the early part of the thirteenth century markets were not unfrequently kept on Sunday.

Although, as we have lately shown *, the origin of fairs claims a higher antiquity than the festival of any Roman Catholic saint, yet many fairs or markets no doubt originated in that way. When bishops and abbots observed that crowds of people assembled from all places to celebrate the festival of their patron saints,' they took advantage of the circumstance, and applied to the Crown for charters to hold fairs at those times for the accommodation of strangers; and with a view to increase their own revenue by the tolls which their charters authorized them to levy at these fairs. Hence the multitude of attendants increased, some of whom were actuated by religious, others by commercial views. Many precautions were taken to preserve good order, and to prevent theft and cheating in these fairs, some of which have been already alluded to.

To this religious origin of many of our markets and fairs may also be referred market-crosses. The first examples of these structures consisted probably of a single shaft elevated on steps, and surmounted by a cross; this was afterwards decorated with sculpture, and, according to the revenues of the market, or the taste of the abbot, they were afterwards made of greater proportions, and arched over, like those at Cheddar, Malmesbury, and elsewhere; or were raised high and decorated with pinnacles, niches, statues, &c., as those at Winchester, Bristol, and several other places. Previous to the Dissolution there was scarcely a market-town in England without one or more of these structures, and although a vast number of them have been

* See page 141 of the present volume.

destroyed by neglect or open violence, many still remain. Some are beautiful specimens of the architecture and sculpture of the times, and all are interesting to the antiquary, who views them as relics of past ages, and memorials of the customs, arts, and manners of our ancestors.

We have shown that our markets and fairs, together with some peculiarities belonging to them, seem to have been derived indirectly from the Romans.

The ancient Greeks do not appear to have had these courts, although matters of the greatest public importance were proclaimed at their markets or fairs, (as were in former times the laws of every session of Parliament in this country, by the king's writ to the sheriff,) at which the Greeks had men called Hellenodicæ, invested with a jurisdiction to judge of the merit and pretensions of the public performers, and probably their jurisdiction extended to preserve also order and good government; and to determine such disputes as arose in that numerous assembly.

Such places as Appii Forum, Forum Julium, &c., seem to have derived their names from the Fora or fairs held there, and were thus distinguished by the names of those men that first had the grant of them. Perhaps from the word Fora, used in this sense, the French derived their *Foires*, or fairs, and not from Feriæ, the Christian holidays, at which times these fairs used to be held.

At the Roman Nundinæ a law prevailed that no candidate for any part of the magistracy should canvass in these fairs; also if the privilege of holding these fairs was discontinued during ten years it was to be lost. This seems to be the case with us, for if a fair is discontinued some time and gone out of use, it cannot be revived upon the prior grant without a fresh concurrence of the lord of the fee.

The fairs and courts, which seem to have been inseparable among the Romans, were held in this country in the same manner, and for the same reason. Such courts were granted by the Crown to certain lords, with a jurisdiction to hear and determine such causes and controversies as arose in the fairs on occasion of covenants, trespasses, and contracts there made, and none else.

The Nundina and Fora of the Romans were carried by them with their conquests into Germany, and to those northern nations afterwards called Gothic; among whom are many instances of this privilege granted by the sovereign to his tenant *in capite* to hold on his fee: hence are derived all the noted fairs in Germany—at Frankfort, Strasburg, Leipsic, Nuremburg, and elsewhere. Many nobles had in their seigniories all coercive powers, but not the privilege of markets and fairs, which was esteemed as one of the choicest gifts of royalty.

From Germany these grants of fairs and corresponding courts came into France, especially Normandy. In the Grand Custumier, or Code of Norman law, the powers of the court are clearly defined. The inferior judges that preside over markets and fairs can take cognizance n measures both of drinking and of corn, if they are fourfalse within their fief or fee, before the king. They have likewise the cognizance, in cases of riot and quarrels in the market (provided there be no bloodshed or wounds), and to fine the offending parties. They have also right to inquire concerning shop-lifting, pound-breach, and violence offered to the prevost or constable in the execution of his office. Also the power to put the price on wines and other liquors, and to receive the fines of those who offend. They can likewise hold pleas, and pleas of pledge, and have cognizance in the case of the rent of homagers, and in default of making their returns.

In a charter of liberties granted by Philip to the Normans, is a clause by which the jurisdiction of these fairs nd markets was confined to things done at the time of the fair; and no man was to be amenable to the fair-courts unless for what happened in that fair, not even if the king, by resumption of the grant, should preside there himself. In conformity with this is the common law of England, by which the king cannot resume the grant of any franchises belonging to a manor, such as market, fair, leet, park, warren, &c., so that the jurisdiction of a market or fair once granted is good against the king.

Hence it appears probable that these courts being so well established among the Normans, were introduced with the Norman conquest into England; unless, as has been supposed by some, they obtained here as a feudal tenure in the Saxon times.

The matters amenable to these courts were such as arose out of transactions on the spot, on account of contracts and other incidents relative to buying and selling; but gradually through the avarice and management of their presidents, the jurisdiction of these courts became extended to matters not properly within their cognizance, so that they became derogatory to the king's authority in his courts, and injurious to the lords of the fair, by discouraging dealers from frequenting them through fear of oppression and false actions; therefore, to restrain these courts within their proper limits, and confine them to their original jurisdiction, of meddling with nothing but what happened during the time of the fair, an Act was passed in the seventeenth year of Edward IV., 1477, from which many particulars relating to these courts were gathered by Dr. Pettingall in his learned essay on the origin of these courts of Pypowder.

Our illustration represents the Cross at Cheddar, Somersetshire, and is taken from Mr. BRITTON'S *Architectural Antiquities*, the source whence our late view of Malmesbury Market-Cross was also derived. This gentleman supposes the Cheddar Cross to have been erected at two different periods; for the central column constitutes one of those crosses which had merely a single shaft raised on steps. The lateral piers, with the roof, were probably added at a later period, for the accommodation of those who frequented the market. The charter to hold a weekly market here was obtained by Bishop Joceline, in the 19th of Henry III.; but the market has been discontinued for several years. The present Cross is hexagonal, with an embattled parapet: the upper part of the shaft is ornamented with a sort of sculptured bandage.

THE truly learned are not they who read much, but they who read what is useful.—ARISTIPPUS.

IT is the office and excellence of all sciences to shorten the long turnings and windings of experience.—LORD BACON.

THE personal well-being of each individual, and the faculty of contributing to the happiness of others, which essentially belongs to it, result from the concurrence and perfect harmony of the three distinct powers, which, according to the received opinion, compose and constitute man: namely, the *heart*, or the moral instinct which produces actions; the *mind*, or the conception and intelligence which combines and directs them; the *body*, or the physical power which executes them. If these three powers, or faculties, were not simultaneously exercised and developed by education, man would possess neither personal happiness, nor the means of contributing to the happiness of others.

If the *body* be not sound and robust, the happiness of the individual is impaired; the *mind* loses its vigour, and the *soul* its energy. A precarious state of health does not permit a person to devote himself to active duties. If the *mind* be not cultivated by instruction, man, brutalized and degraded, renounces his noblest privilege; he is cut off from the most delicious pleasures, and the most solid wealth. If the *soul* be not fraught with a sense of its dignity, nor elevated to the level of its noble destination; if the *heart* be not tender and generous; *physical strength* and the talents of the *mind* are vain advantages, which, when ill directed, are injurious to society in general, as well as to him who possesses merely to abuse them.—*Art of Employing Time.*

ENTERTAINMENTS AT HANWELL LUNATIC ASYLUM*.

INSTEAD of the majority of insane persons being now consigned to the chance of cruelty or oblivion, the utmost care is taken to act on what remains of intellect and feeling in each case; so as to direct the impaired faculties of the understanding, if not always usefully, at least safely, and, at the same time, to cherish and govern the affections by all the resources of compassionate protection. Hope is made to take the place of fear; serenity is substituted for discontent, and the mind is left in a condition favourable to every impression likely to call forth salutary efforts. A chance is thus afforded, to every impaired mind, of recovery to an extent only limited by causes which no human art can remove.

The entertainments given to the patients during the year 1842, were more numerously attended, and more varied in character, than in former years. On New Year's Eve about three hundred female patients partook of an entertainment in one of the wards, which was fitted up with evergreens. During the summer, the matron's birthday was celebrated by a still larger party of the female patients, who drank tea, danced, and played various active games in the open air.

Until this year the male patients had not been indulged with any similar entertainments; but in January last, rather more than two hundred of them, including all who are employed in any way, had coffee and cake in the evening, then amused themselves by singing, dancing, and music, some of the attendants giving able assistance, until eight o'clock, when they had an excellent hot supper (roast beef and apple pies), with one pint of beer, some tobacco, and a new pipe for each patient desirous of smoking. The scene presented was one of the utmost cheerfulness and good humour. All behaved well. Several banners were hung over the tables, made by one of the patients, and containing mottoes complimentary to the magistrates and to the officers. One of them was inscribed "To our noble selves."

The effect of these entertainments is to cheer and console the depressed, as manifestations of the consideration felt for them, and the desire entertained for their happiness, and to interrupt the unhappy thoughts of the more disturbed, with the associations of innocent diversion and joyousness. Such evenings are known to be looked forward to with pleasing anticipations for several weeks, and the patients join in the bustle of preparation for them with alacrity and cheerfulness. The happy assembling, the delight evinced by the patients on the breaking up of the party, their orderly and good-humoured departure from the scene of this simple gaiety, leave the unaccustomed spectator impressed with wonder, and those most familiar with such a scene filled with emotions naturally arising from the view of so much happiness, created by the mere exercise of kindness, in mansions thought to be dedicate to scenes of suffering and woe.

If these effects were transient, their advantage might be deemed inconsiderable. But they are not so. For weeks afterwards the patients entertain an agreeable recollection of their "pleasant party." The little indulgences then permitted are found to blend themselves with all the best parts of moral management, and to contribute to secure the confidence and the affection of the insane. The gratitude thus created becomes a bond of great power; for the patients, in general, fully appreciate all that is done, not only to protect them from suffering, but to impart positive comfort and enjoyment to them.—*Resident-Physician's Fourth Report.*

* Professor Marx, an enlightened German physician, has observed with respect to this establishment, "*Here is practically shown man's power over man, when wielded with humanity.*"

The following references to former volumes of the *Saturday Magazine*, will refresh the memory of the reader.

Vol. I., page 103. Description of Middlesex Lunatic Asylum.
" " 150. On the Treatment of Lunatics
XIII., 45. Report of the Lincoln Asylum.
XV., " 18. Description of the Crichton Institution at Dumfries.

INFANCY, manhood, and old age, are three essentially distinct periods of human life, and a different rate of mortality is peculiar to each.

Like leaves on trees, the race of man is found,
Now green in youth, now withering on the ground,
Another race the following spring supplies;
They fall successive and successive rise:
So generations in their course decay;
So flourish these, when those are passed away.

The deaths in the first month after birth, on account of the rude shocks to which young life is exposed, are more numerous than during a later period of infancy; but within the first five years one third and a half of all the children born, die. It is upon the eve of manhood that the human species has the widest prospect of life, but the mortality increases one-third every ten years between the ages of twenty and fifty, and in old age is nearly doubled.

THE business of education is not to perfect a learner in all, or any of the sciences, but to give his mind that freedom, that disposition, and those habits, that may enable him to obtain any part of knowledge he shall apply himself to, or stand in need of, in the future course of his life.—LOCKE.

INTO the construction and natures of things, men may properly and laudably carry their inquiries as minutely as they please; but when they have discovered the elementary principles, and the laws by which they act, they can go no further without presumption, unless revelation be taken for their guide. Although the Almighty at the beginning organized all things, and established a system for the preservation and continuance of what was originally created; He was not himself bound by those laws, nor restrained to that peculiar order of things. The mechanical principles by which regularity is maintained throughout the universe, are not, as too many have fatally supposed, so essential to matter, as that different laws could not have been settled by the great Creator. This resting in second causes, has led many into scepticism, and from thence to atheism; for if matter has certain inherent powers of action and reaction, it will be difficult to say that matter is not eternal. The philosophy of Scripture has carefully guarded us against this dangerous conclusion, by expressly declaring that the very matter of the universe had a beginning at the divine command, which impressed upon it those laws and powers which we are enabled to observe, and also the secret qualities which have hitherto eluded the researches of philosophy.

The doctrine of the immortal Newton may here be safely adopted. "God Almighty, at the beginning, created just such a quantity of matter as is proportioned to the space in which it was intended to move; that the original particles of this matter are solid, impenetrable, and very durable; that they are of a particular form and size, being endued also with particular laws of motion, from the various texture and composition of which arise those different kinds of bodies of which this world is constituted."—BASELEY.

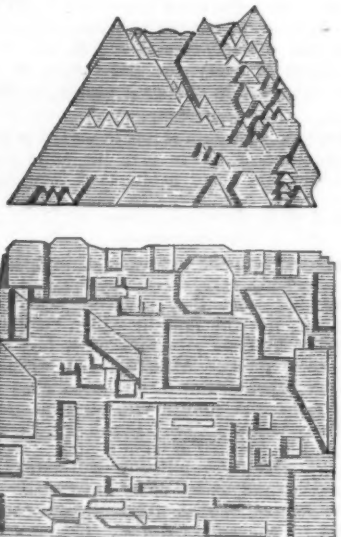
THE utility of riches consists not in the welfare of the individual, but in the general good of society. Whatever tends to loss of health or comfort, or deterioration of morals, in the main body of the nation, is not wealth but poverty, notwithstanding any superficial splendour of things wherewith it may be combined.—*Quarterly Review.*

"WHEN I went," says his friend Collins, the Royal Academician, "to bid Sir David Wilkie farewell, a day or two before he left home for his last journey, I found him in high spirits, enlarging with all his early enthusiasm on the immense advantage he might derive from painting upon holy land, on the very ground on which the event he was to embody had actually occurred. To make a study at Bethlehem from some young female and child seemed to me one great incentive to his journey. I asked him if he had any guide-book: he said, 'Yes, and the very best;' and then unlocking his travelling-box he showed me a pocket Bible. I never saw him again; but the Bible throughout Judea was, I am assured, his best and only hand-book."—*Life of Sir David Wilkie.*

ON SPARS AND CRYSTALS.

II.

THE constitution of crystals, and the geometric arrangement of their internal structure, as shewn by cleavage, were described at pp. 183, 184 of this volume. The same results, as those by cleavage, are obtained by the more delicate dissection of these solids in their solvents. Professor Daniell, for instance, immersed a shapeless piece of alum in water, and left it to dissolve spontaneously. The fluid acted upon it unequally, leaving a mass of octoëdra, and sections of octoëdra, as it were carved or stamped upon its surface, as seen in the engravings.

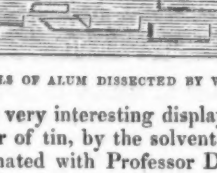


CRYSTALS OF ALUM DISSECTED BY WATER.

The following very interesting display of the internal structure of a bar of tin, by the solvent action of quicksilver, also originated with Professor Daniell, in whose words we will relate the experiment:—

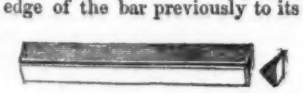
If a small square bar of tin be laid horizontally, be just covered with mercury, and, to preserve uniformity of action, be frequently turned upon its different faces, at the expiration of twenty-four hours minute fissures will begin to appear along its lateral and terminal edges. As the process continues the cracks will widen, and about the third day they will open to such a degree as to shew that the bar is resolved into four equal trihedral [three-sided] rectangular prisms, with two equal angles. These may be readily separated from each other by the point of a knife, as well as two similar pyramids from the two extremities. It is indifferent to this result whether the square form be given to the bar, by casting, hammering, or the filing down of any other shape.

This figure shews the four trihedral bars which result



from the disintegration of a square bar of tin by the action of mercury.

In this figure is represented the regular crack which occurs in the edge of the bar previously to its final separation, together with the small pyramid detached from the summit.



Again, if tin plate be washed over with a weak acid, the crystallization of the tin is often rendered beautifully manifest, and this at one time attracted much admiration under the name of *Moirée métallique*, but the cheapness, arising from the simplicity of the operation, soon brought the manufacture into disrepute.

One of the most interesting facts relating to crystals was discovered by M. Melloni, when experimenting on the transmission of radiant heat through various kinds of solid bodies. Rays of heat are subject to the same laws of reflection and refraction as those of light; but the same body may be perfectly transparent to the luminous, and altogether impermeable to the heated rays. Glass, for example, entirely cuts off the heat of a common fire, although it will admit the passage of its light; actually *filtering* the luminous, from the heated, rays. This property of glass is sometimes usefully employed where it is desirable to see the light of a fire without being incommoded by the heat; and glass-screens are used to protect the eyes when it is necessary to inspect the action of a hot furnace. But glass will admit the passage of solar heat. And it has been observed that rock-crystal, which is a very pure form of flint, Iceland spar, (which it will be remembered was described, in the first part of this paper, as the primitive form of carbonate of lime,) and other transparent bodies, as well as glass, only admit the heated rays in proportion as the temperature of their origin is intense. These bodies, however thin in substance, totally intercept the obscure rays of heat that radiate from anything whose temperature is lower than that of boiling water. But as the temperature increases, the heated rays are transmitted more and more abundantly, and when the source becomes highly luminous, as the sun, the rays penetrate the glass, Iceland spar, &c., with perfect ease.

It was, consequently, supposed that no body was perfectly transparent to heat of every intensity or degree, as glass, for instance, is to every kind of light, from whatever source, or colour. But in rock-salt, extensive beds of which are found in Cheshire, M. Melloni discovered a substance that transmits every variety of heat, even the heat of the hand, just as transparent bodies transmit white light, consisting of rays of all colours. It follows, therefore, that the impermeability of glass and other substances to heat, arises from some particular arrangement of their internal structure, and not from any property of heat itself.

We are indebted, (says Professor Daniell,) to M. Melloni for almost all that we know, with accuracy, of the passage of radiant heat through different translucent substances. He has ascertained that the power in bodies of transmitting rays of heat is by no means proportioned to their transparency, or their power of transmitting rays of light; and amongst crystallized bodies in particular, he has found that some which are highly transparent intercept the whole or the calorific [heated] rays, while others act in a manner directly contrary. These properties are invariably manifested, whatever be the temperature of the source, and become yet more singular at low temperatures; for in the latter case it is found that the ordinary heat of the hand will pass through a solid body of several inches in thickness. Different kinds of glass vary in their powers of transmission, from sixty-seven per cent. in flint-glass, to forty-nine per cent. in crown-glass; while perfectly diaphanous rock-salt will transmit ninety-two out of every hundred rays; and equally diaphanous alum only twelve. To distinguish those bodies which possess a capacity for calorific transmission, from those which possess a capacity for luminous transmission, he has proposed the term *diathermanous* for the former, as analogous in form to the epithet *diaphanous*, applied to the latter. In one experiment he employed a plate of alum, well polished, and perfectly transparent, only ·06 of an inch in thickness, and compared it with a plate of smoky quartz 3·38 inches thick, which was of so decided a brown colour that the large letters of a printed page, placed in the fullest light, could not be traced through it; and found that the latter allowed only six per cent. of the rays to pass through it, while the former afforded a passage to nineteen per cent. Moreover, it appears that rock-salt, successively exposed to radiation from different sources, always transmits immediately the same quantity of heat,

and it is the only known substance which thus acts. A plate of any other diathermanous substance will, under the same circumstances, transmit quantities less considerable in proportion as the temperature of the source is less elevated.

The refraction and constant transmission of the calorific rays from any source through rock-salt being established, it is easy to see the use which may be made of this substance in carrying on the investigation with regard to the nature of radiant heat. When formed into lenses and prisms, it will act upon calorific rays in a manner perfectly analogous to that in which optical instruments act upon luminous rays. The feeblest emanations may thus be concentrated to a focus, or propagated to a distance. It constitutes, to use M. Melloni's expression, the *true glass* of radiant heat. All other transparent bodies are but partial and incomplete transmitters of heat, totally intercepting calorific rays of a certain kind, just as coloured media intercept coloured rays of certain kinds.

Some very obscure actions take place, under certain conditions, in the interior of crystals, in the consideration of which our attention must be more immediately directed to the atoms or particles of matter.

If sulphur be cooled after fusion, it sets into large and beautiful crystals, which, unlike the roll-sulphur of commerce, are at first perfectly clear and transparent. But these soon became opaque. Without any alteration in their external form a curious change occurs in the internal structure of the crystals, corresponding to the change of temperature. This new arrangement of the particles obstructs the passage of the rays of light, and the property of transparency is lost.

Iodide of mercury affords a beautiful example of the delicacy of the causes that re-adjust the interior economy of crystals. A slight scratch with a hard substance, as the point of a pin, is sufficient to set the particles of a crystal of the iodide in motion, and changes their colour from a sulphur-yellow to a bright red. It must be remembered that colours are not separate forms of matter, however subtile. Nor are they even properties of matter; but simply result from the action of matter upon light. It is well known that Sir Isaac Newton demonstrated the compound nature of white light by dividing it into seven coloured rays, namely, red, orange, yellow, green, blue, indigo, and violet. By a certain arrangement of the atoms of matter, the substance of one body is porous to all these rays, except the yellow, which is reflected from the body to the eye of the observer, who receives the sensation of the yellow ray upon the nerve of vision. Another body, by another arrangement of the atoms or particles of matter of which it is composed, admits the entrance of all the rays except the red, which is reflected from the body to the observer, who therefore calls it red. But in the experiment above mentioned, the same body is first yellow, and afterwards red. The scratch of the pin must, therefore, be supposed to have changed the internal arrangement of its atoms in such a manner as to have closed the structure of the crystal against the red, and admitted the entrance of the yellow ray.

The alteration of the internal structure of a body, taking place without any change in superficial form, has become a subject of public interest, from the fact that the iron axles of carriages are liable to become brittle, that is, liable to a displacement of their internal particles, from the perpetual tremulous vibration to which they are exposed upon the railways. Although the toughest and most fibrous wrought-iron is always selected for the purpose, yet, in consequence of the vibration, the particles are believed slowly to assume a crystalline arrangement, as in cast-iron, and ultimately to become as brittle.

These facts give entirely new views with regard to the constitution of solid bodies. We are led from the mobility of fluids to expect great changes in the relative position of their molecules (or atoms), which must be in perpetual motion, even in the stillest water or calmest air; but we were not prepared to find motion to such an extent in the interior of solids. That their particles were brought nearer by cold and pressure, or removed farther from one another by heat, was to be expected, but it could not have been anticipated that their relative positions could be so entirely changed as to alter their mode of aggregation. It follows, from the low temperature at which these changes are effected, that there is probably no portion of inorganic matter that is not in a state of relative motion.—Somerville's *Connexion of the Physical Sciences.*

Our limits prevent us adding to these facts. But enough has been said to show the amount of science that a knowledge of crystals would imply. Let the student commence by a collection of the objects themselves, and these will introduce him to a succession of absorbing subjects, the phenomena of which he will be soon able to class in their natural order. It is said of the historian Sismondi, that an engagement in a merchant's office instilled into his mind such a habit of orderly arrangement as enabled him, in after years, to *post* his facts with a most business-like philosophy; and so the practice of arranging natural objects, however unpretending may be our domestic museum, likewise begets a habit of classifying the natural knowledge we possess. Confining our attention, for example, to a tray of spars and crystals, even if we learn only their more outward physical characters, such as, form, colour, texture, cleavage, &c., our faculty of observation and discrimination will be quickened, and the power of describing THINGS will be enlarged, and these are useful talents for the common purposes of life. If we farther learn their chemical constitution, this will acquaint us with the reason of their various uses in manufactures, agriculture, and the arts in general. Lastly, if we examine the relations which each crystal bears separately to the great agents of attraction, light, heat, and electricity, we rise from the observation of matter to reflect upon the phenomena of creation, and to contemplate, at a nearer point of view, the wisdom and goodness which the Almighty continually reveals to the humble students of his works. F.

ELEGANT YUCATAN DANCE.

The riband, or pole dance, excited most attention. A pole about twenty feet long was raised perpendicularly, from the top of which were fastened fifteen or twenty pieces of wide variously-coloured ribands. Each dancer, laying hold of a piece and extending it, formed a wide circle round the pole. The dancing commenced at a given signal, all joining. They crossed each other with the greatest precision, and in such order as to form a beautiful lattice or net-work with the ribands, until they were wound up. The figure then suddenly changes, and the ribands by a reverse movement are unwound. This they continue until they are tired.—Norman's *Yucatan.*

AUSTRALIAN EPIGRAM ON THE EUROPEAN

On road the white man walks with creaking shoes;
He cannot walk up trees, nor his feet fingers use.

AN AQUEDUCT STEREOTYPED.

On entering the town of Perge (Asia Minor) I noticed a wall which at first I thought was Cyclopean, but afterwards found it to be of rock or stone without joints. On following it there appeared in places some jointed stone wall, and to my surprise I discovered that this had been an aqueduct, and that the deposit from the water had formed a solid mass, or cast, from which the stone walls which had formerly inclosed it had fallen away; in some places these walls remained, but were entirely encrusted in the deposit, which, having filled up the original water-course, extended over its sides, covering the whole structure, and giving the appearance of a solid stone wall. In many water-courses in the town I found the arch of masonry inclosing a solid mass of the stone formed by this deposit; and the earthen pipes which were placed upright against the buildings, some of six inches in diameter, were in many instances completely filled up, or had an opening or bore left not larger than a quill; these were probably rendered useless during the existence of the town.—Fellowes.

QUEEN ELIZABETH'S VISIT TO CAMBRIDGE IN 1564.

II.

On Sunday, 6th August, 1564, morning prayer being ended, between seven and eight o'clock every man repaired to the court gate to wait upon the queen; the doctors in their scarlet gowns, standing two and two according to their degree and seniority. A brilliant procession accompanied the queen, who went on foot to church, at the door of which stood four of the eldest doctors holding the canopy under which her majesty proceeded to her travas. The Litany was then read; after which a sermon was preached in Latin by Dr. Andrew Perne, the queen drawing aside the curtains and sitting at the end of the stool so as to be seen of all the people. During the sermon the queen sent Lord Hunsdon to request the preacher to put on his cap, and at the close she sent him a message, "that it was the first sermon that ever she heard in Latin, and she thought she should never hear a better." After the quire had sung, the queen retired under the canopy as before. This canopy was claimed by the queen's footmen as their fee, but it was redeemed on payment of 3*l.* 6*s.* 8*d.*

Some notice was taken by the nobility respecting the costume of the masters regents, and complaint was made that some of them "went in white silk, and others in mynever*." "Also some masters were noted by the queen's majestie to be but masters, because their habits and hoods were torn and too much soiled."

The queen having signified her intention not to be present at the afternoon service, it was performed as usual, but before it was concluded her majesty was desirous of attending it, and on her appearance in the chapel it was commenced again.

After this her majesty went to the representation of a play of Plautus, "for the hearing and playing whereof was made, by her highnes surveyor and at her own cost, in the body of the King's College Church a great stage containing the breadth of the church from the one side to the other, that the chappels might serve for houses. In the rood-loft, another stage for ladies and gentlewomen to stand on. And the two lower tables, under the said rood-loft, were greatly enlarged and rayled for the choyce officers of the court."

Matters being thus arranged the lord chamberlain and the chancellor came in with a number of the guard, each having in his hand a torch-staff to serve "for the lights of the play." They would not allow any of the audience to occupy the stage except a few on the north side. The guard stood upon the ground by the side of the stage holding their lights, and a raised platform railed on both sides, along which the queen was to pass, connected the choir with the stage. The play was not over until twelve o'clock.

During the queen's visit the Term was resumed in order that her majesty might have an opportunity of observing the whole routine of the university studies and proceedings, therefore on Monday morning at eight o'clock the university bell was rung, and the lords and gentlemen visited the schools and heard the lectures "as well of physic, dialect, rhetoric, as of divinity and law." The divinity lecture was read in the schools of logic, the great divinity school having been converted into a bedroom, and the higher school was occupied with "the office of the spicery."

Among the guests attracted to Cambridge by the presence of the queen, are specially noticed the proctors of the University of Oxford, "who, by common consent and speciall commandment of that whole university, were sent hither, with their esquire and principal bedell, to see and hear, as near as they could, for their better instructions (if it should fortune the queen's majestie to visit that universitie) all our doings, order, and proceedings. These men went daily in their gowns and hoods, and were very well used of all men, and especially of Mr. Secretary, by whose counsell one of them confessed why they were moved to come hither. They were daily feasted of one or other. And now, by especiall commandment of Mr. Secretary, after this sort placed (as they were continually placed), and sate next our proctors, in all our common and open doings."

The queen desiring to be present at the disputations, a large stage was erected for the purpose in St. Mary's church. At the east end was erected a spacious room for her majesty's use; it was hung by her own servants with rich arras and cloth of state, "and all other necessaries, with a cushion to lean upon."

When everything was prepared, and the company assembled, the university bell was rung, and the queen advanced to her place, the graduates kneeling and crying "Vivat Regina." After she was seated the secretary explained the general arrangement of the company, and the nature of the scholastic exercises about to be exhibited.

After some preliminary proceedings the questions to be disputed were handed to her majesty, and the respondent proceeded with his oration, which being ended, four masters of arts replied; "with whome her majestie was so much pleased, that she, by divers gestures, declared the same: and sundry times stayed the proctors from taking them up. And, when they did cut them off, she seemed to be offended, saying, "If she had the moderation, they should not have been so abridged!" After these and sundry other orations were ended, which lasted about *six* hours, the queen "very merrily" departed; and within two hours afterwards proceeded to the exhibition of a play called Dido, which was enacted at the charges of the company of King's College.

On Tuesday, the 8th August, the queen was entertained in a somewhat similar manner; and so much was this to her satisfaction that she determined to remain there one day longer than had at first been appointed. Her intention was to have departed on Wednesday, and it was even said that "if provision of beer and ale could have been made, her grace would have remained till Friday, her highness was so well pleased with all things."

On Wednesday, the 9th, after the ordinary lectures and disputations the queen inspected all the colleges, at each of which she was received, as usual, with an oration, sometimes in Latin prose, at others in Greek verses, her majesty returning thanks in either language.

Gloves and comfits were also presented by some of the colleges. At King's College, the provost delivered to her majesty a "fair book, covered with red velvet, in which was written, in the Roman hand, all the verses both of Greek and Latin, Hebrew, Caldee, and English, which were made of her coming, and otherwise set up in divers places of the town. In the same book was also copied and digested the founders and benefactors of every college; the names of every company and their degrees; and the names of all those which had been brought up in the same, which had come to some great estimation in the world, or been in any high function, as bishops, embassadours, or any special or entire servant of the prince." The queen received this book with a "mild countenance" and delivered it to one of her footmen. During her visits to these colleges, the queen talked a great deal with the scholars in Latin.

In the afternoon of the same day the queen was entertained at St. Mary's church with disputations in divinity. They were made shorter than usual for want of time, and some of the speeches were omitted; the queen, however, requested Dr. Baker, master of King's College, to dispute, because "he was her host; and she feared to lack her lodging if he should be disappointed."

At the conclusion of this entertainment, the lords kneeling down, "humbly desired her majesty to speak something to the university, and in Latin." The queen at first refused, saying, "That if she might speak her mind in English, she would not stick at the matter." But being informed by the secretary that nothing might be said openly to the university in English, she

* Mr. Nichols explains this to be "a skin speckled with streaks of white."

requested him to speak, "because he was chancellor, and the chancellor is the queen's mouth." Sir William replied, that "he was chancellor of the university, and not her's." The Bishop of Ely then knelt down and said that "three words of her mouth were enough." Being thus entreated on all sides, she made her "notable oration in Latin, in the presence of the whole university, to the students' great comfort,"

The following is a translation of this remarkable speech.

Although that womanly shamefacedness, most celebrated university, and most faithful subjects, might well determine me from delivering this my unlaboured speech and oration before so great an assembly of the learned; yet the intercession of my nobles, and my own good-will towards the university, have prevailed with me to say something,

And I am persuaded to this thing by two motives:—The first is, the increase of good letters; which I much desire, and, with the most earnest wishes, pray for. The other is, as I hear, all your expectations.

As to the increase of good letters, I remember that passage in Demosthenes, "The words of superiors have the weight of books with their inferiors; and the sayings of princes retain the authority of laws with their subjects." This one thing then I would have you all remember, that there will be no directer, no fitter course, either to make your fortunes or to procure the favour of your prince, than as you have begun, to ply your studies diligently. Which that you would do, I beg and beseech you all.

As to the other motive, to wit, your expectations; I only say that there is nothing I should rather have chose to have let alone than this one thing. Because your benevolent minds, I perceive, entertain so high thoughts of me.

And now I come to the university. This morning I have beheld your sumptuous edifices, erected by several most illustrious princes, my ancestors, for the sake of learning. And in seeing them a grief seized me, and those anxieties of mind which are said once to have caught hold of Alexander the Great; who, when he had perused the many monuments of other princes, turning to his favourite or rather counsellor, much lamented that there should ever have lived any who outwent him either in time or actions. So no less did I grieve when I beheld your structures, that I as yet had done nothing of this sort.

The common proverb, which, though it cannot utterly remove my concern, may yet assuage it, hath nevertheless a little comforted me. The saying I mean is, "Rome was not built in a day."

For my age is not so far advanced, nor again is it already so long since I began to reign, but that, before I pay my last debt to nature (if cruel Atropos do not too soon cut the thread of my life), I may erect some passing good work. And from this design, as long as I have any life left, I shall never depart. And if it should happen (which indeed I cannot tell how soon it may) that I must die before I can complete this thing, which I now assure; yet will I leave some famous monument behind me whereby both my memory shall be renowned, and I, by my example, may excite others to the like worthy actions; and also make you all more ready to pursue your studies.

But now you see the difference between true learning and an education not well retained. Of the one of which you yourselves are all more than sufficient evidence: and of the other I, too inconsiderately indeed, have made you all witnesses.

It is time then that your ears, which have been so long detained by this barbarous sort of an oration, should now be released from the pain of it.

This speech is said to have "marvellously astonied" the auditors, who having recovered their surprise uttered a loud "Vivat Regina." But the queen said, as far as respected her oration, "Taceat Regina," and wished, "that all they that heard her oration had drunk of the flood of Lethe."

Very extensive preparations had been made for the representation of a Latin play in the evening, but the exertions of the day; the late hours which former plays had occasioned; and wishing to depart early the next morning from Cambridge, in order to dine at Stanton, at the house of Dr. Cox, Bishop of Ely; and afterwards to proceed to Sir Henry Cromwell's, at Hinchinbrook Priory: all this induced her majesty to absent herself from the play, to the great sorrow, not only of the players, but of the whole university.

On Thursday morning, the 10th of August, about nine o'clock, the queen left Cambridge. She was met at the porch of her lodging by a deputation from the university: among whom was Mr. Thomas Preston, who, in "a very goodly oration" bade her majesty farewell. The queen was so well pleased with the orator that putting forth her hand for him to kisse, her highness dubbed hym her scholar, and exhorted him to continue in his studie with diligence, saying, the whole body of the university might rejoice that ever it nourished so profitable a member; and therewithal she gave him viii angels.

On passing by the schools the queen was met by other members of the university, who kneeling, wished her majesty a safe and prosperous voyage. To which she replied "Valete omnes." There was also a deputation with an oration from Magdalen College, but this she declined to hear in consequence of the heat of the day and the great crowd of people. "She therefore required the paper of the oration; which being exhibited, she departed, and was by all men's prayers, committed to the grace and tuition of Almighty God, who ever bless her. Amen."

TERRESTRIAL REFRACTION AND REFLECTION OF LIGHT.

Some very singular appearances occur from the accedental expansion or condensation of the strata of the atmosphere contiguous to the surface of the earth, by which distant object, instead of being elevated, are depressed; sometimes being as once both elevated and depressed, they appear double, ont of the images being direct, and the other inverted. In consequence of the upper edges of the sun and moon being less refracted than the lower, they appear to be oval when near the horizon. The looming also, or elevation of coasts, mountains, and ships, when viewed across the sea, arising from unusual refraction, a friend of the author's, while standing on the Plains of Hindostan, saw the upper chain of the Himalaya mountains start into view, from a sudden change in the density of the air, occasioned by a heavy shower, after a very long course of dry and hot weather. Single and double images of objects at sea arising from sudden changes of temperature, which are not so soon communicated to the water on account of its density as to the air, occur more rarely, and are of shorter duration than similar appearances on land. In 1818, Captain Scoresby, whose observations on the phenomena of the polar seas are so valuable, recognised his father's ship by its inverted image in the air, although the vessel itself was below the horizon. He afterwards found that she was seventeen miles beyond the horizon, and thirty miles distant. Two images are sometimes seen suspended in the air over a ship, one direct, and the other inverted, with their topmasts or their hulls meeting, according as the inverted image is above or below the direct image. Dr. Wollaston has proved that these appearances are owing to the refraction of the rays through media of different densities by the very simple experiment of looking along a red-hot poker at a distant object. Two images are seen, one direct, and the other inverted, in consequence of the change induced by the heat in the density of the adjacent air.—(See *Saturday Magazine*, Vol. XIII., p. 205.)

As the brightness of a *reflected* image depends on the quantity of light, those arising from total reflection must be by far the most vivid. The delusive appearance of water, so well known to African travellers, and to the Arab of the desert, as the Lake of the Gazelles, is ascribed to the reflection which takes place between strata of air of different densities, owing to radiation of heat from the arid sandy plains. The mirage described by Captain Mundy, in his *Journal of a Tour in India*, probably arose from this cause. "A deep precipitous valley below us, at the bottom of which I had seen one or two miserable villages in the morning, bore in the evening a complete resemblance to beautiful lake; the vapour, which played the part of water ascending nearly halfway up the sides of the vale, and on its bright surface trees and rocks being distinctly reflected. I had not been long contemplating the phenomenon, before a sudden storm came on, and dropped a curtain of clouds over the scene."—Somerville.

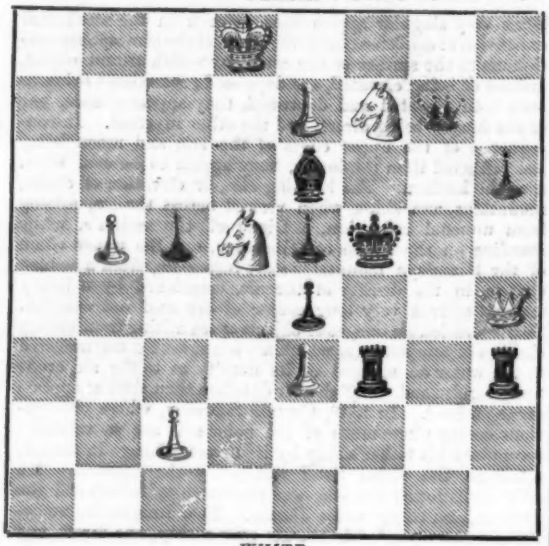
CURIOUS CHESS PROBLEMS.

II.

THE following problem, the invention of M. Calvi, of Paris, is one of great ingenuity and beauty. It was first introduced to the Chess Club of that capital as a problem of more than ordinary difficulty, and it was not solved during the meeting. M. Alexandre, author of the *Encyclopædia of Chess*, was the first to discover the solution, but this was not until the morning after the meeting of the club. We were present when that gentleman introduced the problem, for the first time, into chess society in England. It excited considerable interest and amusement; and many were the fruitless attempts made even by good players to solve it. It was first published in this country by Mr. Huttmann. We insert the problem, hoping that some of our young chess friends may be disposed to bestow their skill and patience upon it. That it will be a hard exercise for both, there can be no doubt. Should they succeed in discovering the solution, they will be well rewarded: should they fail, they may console themselves with the reflection that wiser chess heads than their own have tried in vain.

White moving first is to give check-mate in four moves.

BLACK.



WHITE.

SOCRATES professed "to know only this, that he knew nothing." In this declaration, he had no other intention than to convince his hearers of the narrow limits of the human understanding; nothing was farther from his thoughts than to encourage universal scepticism. Although eminently furnished with every kind of learning, he preferred moral to speculative wisdom. Convinced that philosophy (that is, natural religion) is valuable, not as it furnishes questions for the schools, but as it provides men with laws of life, he censured his predecessors for spending all their time in abstruse researches int nature, and taking no pains to render themselves useful to mankind. His favourite maxim was, whatever is above us doth not concern us. He estimated the value of knowledge by its utility, and recommended the study of geometry, astronomy, and other sciences, only so far as they admit of a practical application to the purposes of human life. His great object, in all his conferences and discourses, was to lead men into an acquaintance with themselves; to convince them of their follies and vices; to inspire them with the love of virtue; to furnish them with useful moral instructions. Cicero might, therefore, very justly say of Socrates, that he was the first who called down philosophy from heaven to earth, and introduced her into the public walks and domestic retirements of men, that she might instruct them concerning life and manners.—ENFIELD'S *History of Philosophy*.

NATURAL MUSIC.

THE gentleness of the autumnal suns, and the calmness of this latter season, make my green-house (writes the poet Cowper) a much more agreeable retreat than we ever find it in the summer, when the winds being generally brisk, we cannot cool it, by admitting a sufficient quantity of air, without being at the same time incommoded by it. But now I sit with all the windows and the door wide open, and am regaled with the scent of every flower, in a garden as full of flowers as I have known how to make it. We keep no bees, but if I lived in a hive I should hardly hear more of their music. All the bees in the neighbourhood resort to a bed of mignonette opposite to my window, and pay me for the honey they get out of it by a hum, which, though rather monotonous, is as agreeable to my ear as the whistling of my linnets. All the sounds that nature utters are delightful, at least in this country. I should not, perhaps, find the roaring of lions in Africa, or of bears in Russia, very pleasing; but I know no beast in England whose voice I do not account musical, save and except, always, the braying of an ass. The notes of all our birds and fowls please me, without one exception. I should not, indeed, think of keeping a goose in a cage, that I might hang him up in the parlour for the sake of his melody, but a goose upon a common, or in a farm-yard, is no bad performer; and, as to insects, if the black-beetle, and beetles, indeed, of all hues, will keep out of my way, I have no objection to any of the rest; on the contrary, in whatever key they sing, from the gnat's fine treble, to the bass of the humble bee, I admire them all.

Seriously, however, it strikes me as a very observable instance of providential kindness to man, that such an exact accord has been contrived between his ear and the sounds with which, at least, in a rural situation, it is almost every moment visited. All the world is sensible of the uncomfortable effect that certain sounds have upon the nerves, and consequently upon the spirits. And if a sinful world had been filled with such as would have curdled the blood, and have made the sense of hearing a perpetual inconvenience, I do not know that we should have a right to complain. But now the fields, the woods, the gardens, have each their concert, and the ear of man is for ever regaled by creatures, who seem only to please themselves. Even the ears that are deaf to the Gospel are continually entertained, though without knowing it, by sounds, for which they are solely indebted to its Author.

IN the common affairs of life it may be observed, that men appear to be more influenced in their conduct by little motives, which they should be ashamed to confess, than by important and reasonable considerations: hence it is that revolutions so often take place in human affairs for which it is impossible to account; because the real motives of action are too small to be known, or even suspected. This is chiefly owing to the habitual indolence of the mind, which, by lessening the force of reason, leaves more room for the operation of inconsiderable motives.

IT has happened to a very worthy family of my acquaintance to change their place of abode more frequently than people settled in life are most wont to do. At these occasional migrations, they observe a custom, which for its purity and simplicity you will hardly find surpassed by any of the primitive habits of our forefathers. My friends do not suffer any of their worldly goods to be removed into a new house before a Bible and loaf of bread have been first deposited within the walls. The heart is with its treasure. Gold and silver are made to give place to more precious things which cannot be valued with the gold of Ophir, an open acknowledgment is made of their dependence upon God's good gifts, and hopes are expressed that none under or around their roof may ever know the want of "daily bread." Need I add that marked blessings have followed them through life? Their home, indeed, has not been without affliction, but their hearts are still serene, and the world calls them "fortunate." Would that every one of us reduced to practice the simple arts of persevering faith and cheerful charity which, under the blessing of the Almighty, have been the means of their well-doing.—Z.

JOHN W. PARKER, PUBLISHER, WEST STRAND, LONDON.